

Standards & Interoperability

NSWC Carderock Division
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Goal

- * Understand Concepts
 - What do we mean by ***"Interoperability"***
 - What do we mean by ***"Standards"***
 - Conversion



Interoperability

- * Definition: *the ability of systems or activities to provide services/information to, and accept services/information from, each other and to use and understand those services/information effectively.*



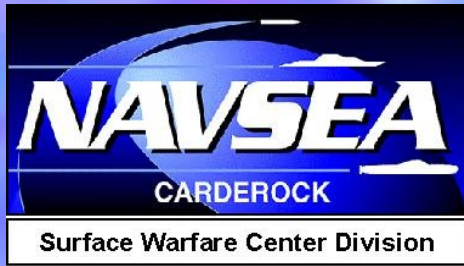
“Interoperability” - Implications

- * Data Interchange
- * Common Interpretation
- * Acceptable Understanding
- * “Seamless Interface”



Standard

- * 1. n. *the type, model, or example commonly or generally accepted or adhered to; criterion set for usage or practices*
- * 2. n. *Something that is established by authority, custom, or general consent, as a model or example to be followed*



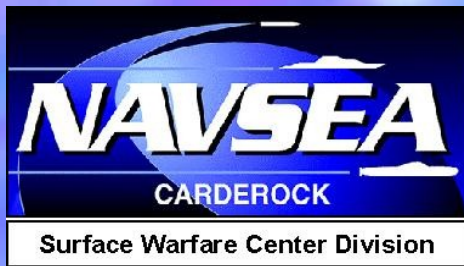
“Standard” - Implications

- * There are Published Rules
- * Conformance Can be Tested
- * Known to Community of Interest



Standards - Pervasiveness

- * Touch All Phases of Life
 - Measures, Utilities, Transportation, Communication
- * Make Things Easier, Simpler, Interoperable
- * Standards Support Interoperability
- * Data Standards Support Data Interoperability



Data Standards

- * Data Element: *an item of data with formally agreed name, meaning, and characteristics, as well as, relationship to other standard data elements (ISO/ANSI 11179)*
- * Data Interchange: *a formally defined and agreed to syntax and encoding of a graphics or alphanumeric construct so as to make it unambiguously machine interpretable*



Data Element Standards

- * C4IS Need: e.g., Combat Id
- * Examples:
 - Defense Data Dictionary System (DDDS)
 - Shared Data Elements (SHADE)
- * DON Data Management Interoperability (DMI)



Data Interchange Standards

- * Concerned with Format & Syntax
- * Focus of Logistic Tech. Data Policy Guidance
 - IGES, STEP, CGM, CCITT G4, SGML, XML



When is a Standard not a Standard?

- * WWW Equivalent of “Standard” Is a “Recommendation”

“work that represents consensus within W3C and has the Director's stamp of approval. ... ideas or technology specified ... are appropriate for widespread deployment and promote W3C's mission.”



Conversion

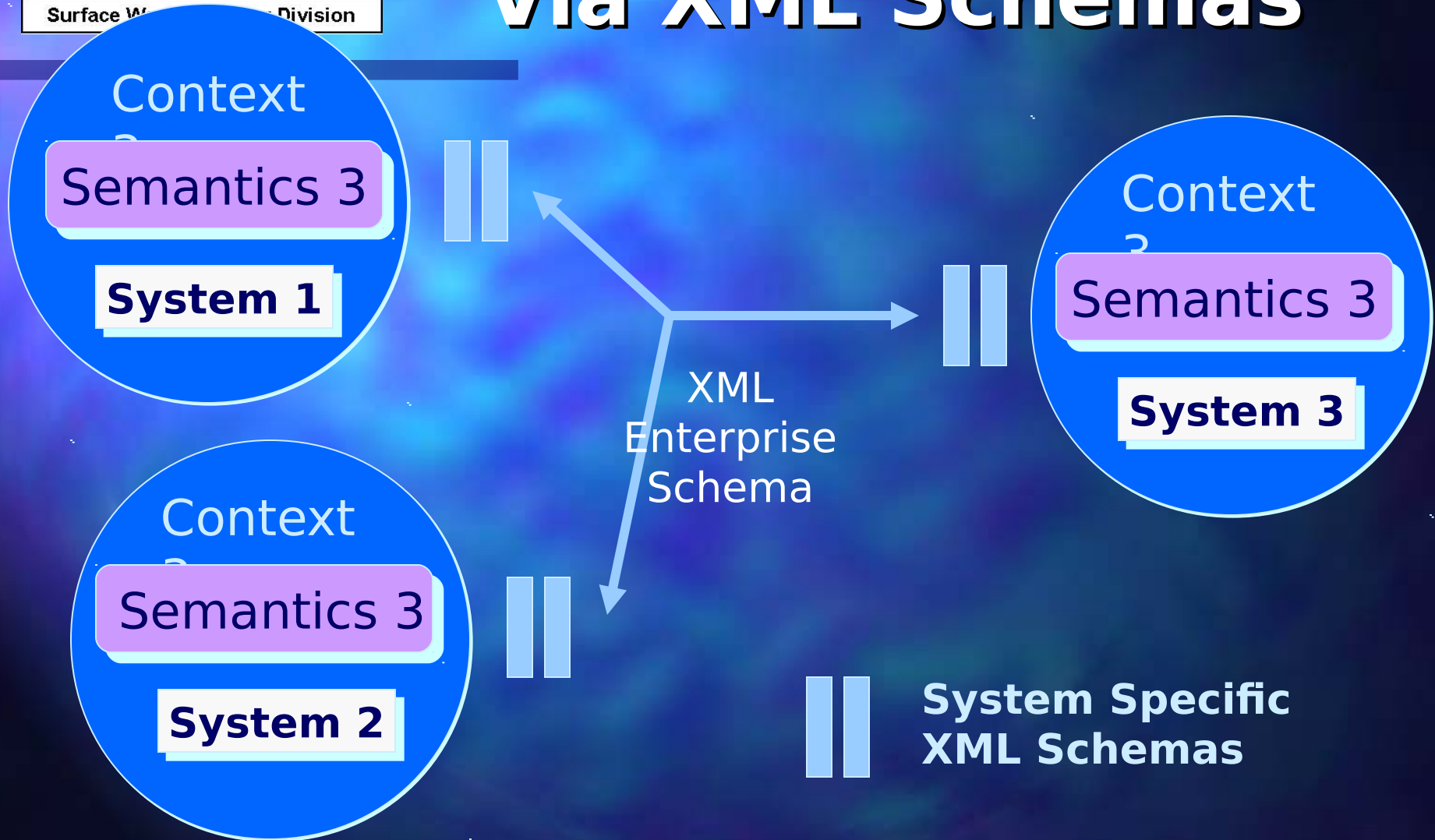
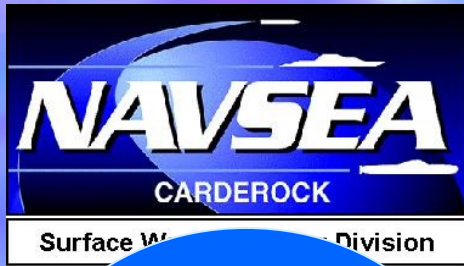
- * Translators, Filters, Transforms
 - tools and program code to convert one format to another
- * Standards Simplify Conversion
- * XML
 - Tool for Data Transform & Interoperability



What is XML

- * XML is a subset (approx.) of SGML, ISO 8879:1986(E) for the World Wide Web
- * W3C Recommendation
 - <http://www.w3.org/TR/2000/REC-xml-20001006>
- * Streamlined SGML designed to support information exchange
 - greater flexibility than HTML
 - supports content tagged data natively
 - increases data typing with schemas

Integrated Data Environment Via XML Schemas



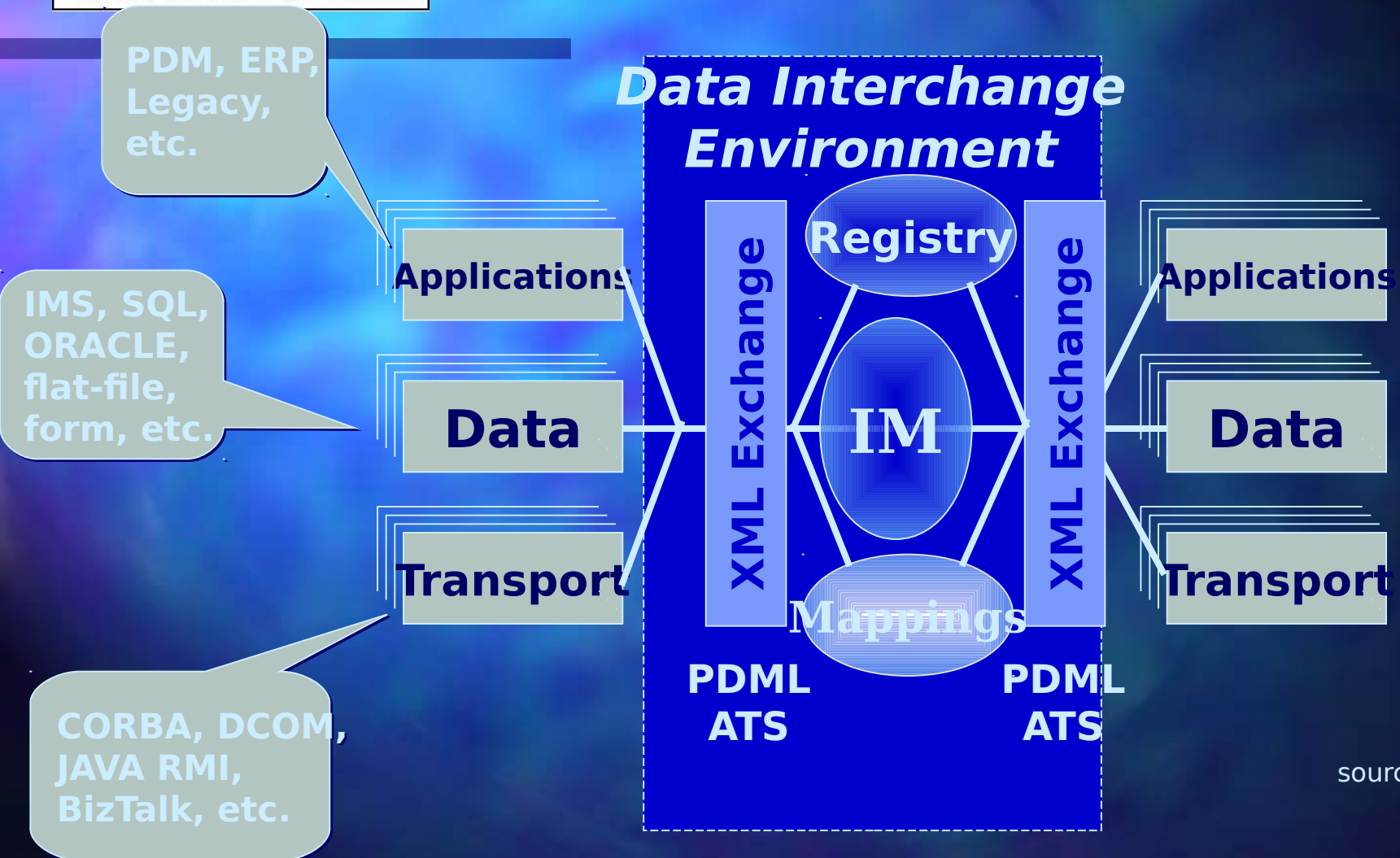


PDML Product Data Markup Language

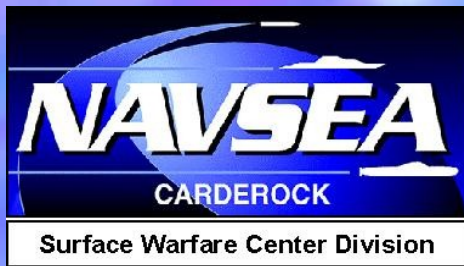
- * XML Vocabulary to support interchange of Product information among Systems
- * A Suite of Domain Specific Vocabularies Integrated thru a Single Enterprise Vocabulary (Schema) via Mapping Specifications
- * A Product data Interoperability Project Supported by JECPO
- * DII Prototype for Form 339 Transfer



PDI / PDML: *architecture (12-99)*

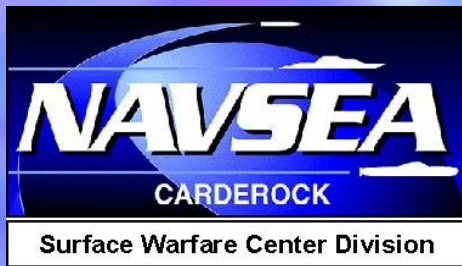


source: PDIT



Roles

- * “Standards” are NOT the Goal
- * “Interoperability” IS the Goal
- * Challenge: Selecting the Right Combo of Data Standards and Tools to Achieve Goal



Real Life

- * 23 Sep 1999 @ 0215: NASA Mars Climate Orbiter lost
- * Cause: conflicting units of measure used to control the vehicle's rockets
- * Loss: \$125M and Substantial Effort
- * Problem:
 - Interoperability?
 - Data Element?
 - Date Interchange?
 - Data management?
 - Programming?, Transform? Testing? ...